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Inequality and Crime across England: A Multilevel Modelling Approach

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The link between inequality and negative social outcomes has been the subject of much debate recently, brought into focus by the publication of The Spirit Level. This article uses multilevel modelling to explore the relationship between inequality and five crime types at sub-national level across England. Controlling for other factors, inequality is positively associated with higher levels of all five crime types and findings are robust to alternative inequality specifications. Findings support the sociological – but not economic – theories and highlight the importance of policies to tackle broader social and economic inequalities.

Keywords: Crime, inequality, The Spirit Level, multilevel models.

Introduction

The negative impact of greater inequality on a range of social outcomes has become a central topic of current social policy (see for instance Wilkinson and Pickett, 2009; Dorling, 2010). Whilst the links between inequality and more negative health outcomes have been most widely assessed (Subramanian and Kawachi, 2004; Wilkinson and Pickett, 2006, 2009; Kondo et *al*., 2009), the relationship between inequality and crime has also been the subject of considerable theoretical and empirical study throughout the twentieth century. Theoretically, accounts emphasising economic rationality (Becker, 1968), strain (Merton, 1938) and social disorganisation (Shaw and McKay, 1942) dominate the literature and there has been much theoretically guided quantitative research into the relative merits of these theories. The present article follows this approach.

In terms of previous findings, studies tend to support the link between inequality and higher levels of crime. In a meta-analysis of 34 studies across a range of geographical scales, Hsieh and Pugh (1993) find that almost all of the bivariate correlations between inequality and violent crime outcomes are positive. National level research has likewise found a consistent positive relationship between inequality and homicide (Braithwaite, 1979; Messner, 1982; Lederman *et al*., 2002) and, using panel data, between inequality and both robbery and violent crime (Fajnzylber *et al*., 2002). At sub-national level, US studies have found positive associations between inequality and homicide across states (Loftin and Hill, 1974; Kennedy *et al*., 1998) and across metropolitan areas (Danziger and Wheeler, 1975; Blau and Blau, 1982). At county level in the US, Kelly (2000) finds that inequality is positively associated with violent crime but unrelated to property, whilst in a South African study at small area level Demombynes and Ozler (2002) find a positive link between local inequality and both burglary and vehicle theft.

The present article employs a multilevel modelling approach in order to provide new evidence around the impact of inequality on five crime types (burglary, robbery, violence, vehicle crime and criminal damage) at sub-national level across England when controlling for other actors. Findings show consistent positive associations between inequality and all five crime types at the key operational geography of Crime and Disorder Reduction Partnership (CDRP) level across England for the period 2002–09. The analyses contribute to existing knowledge in several ways. A feature of the body of criminological evidence is its strong US dominance, which may not apply equally to alternative contexts (Stack, 1984). Whilst the UK has been included within cross-country studies, as Kelly (2000) notes, there is a surprising lack of country-wide sub-national (particularly CDRP) evidence for the UK context. The present article provides such new empirical evidence as to the apparent relevance of inequality to crime within the sub-national English context and does so using robust multilevel modelling to take into account a range of key explanatory factors as well as the nesting within the data structure. The analyses also provide insights as to the relative usefulness of the three main criminological theories linking inequality and crime. The following section briefly outlines these three theoretical accounts so as to inform both the discussion of relevant explanatory variables for the modelling as well as the interpretation of findings.

Theoretical accounts of the relationships between inequality and crime

Three theories – one economic and two sociological – dominate the literature around inequality and crime. Following Becker's (1968) classic account – further developed by Ehrlich (1973), Danziger and Wheeler (1975), Block and Heineke (1975), Chiu and Madden (1998) and Bourguignon (2001) amongst others – the economic theory hypothesises that crime is driven by the differential economic returns to illegal compared to legal activity, where inequality encourages low-income and unemployed individuals towards criminal rather than legitimate activity. According to the economic theory, the spatial proximity of low-income and high-income individuals creates economic incentives towards criminal activity, with costs incorporating a consideration of deterrent effects of the criminal justice system (particularly risk of arrest and severity of punishment) and travel costs, whilst wealthy households can use enhanced private security (burglar alarms, high gates, window locks) in attempts to skew offenders' incentive structures away from them. Intuitively, the economic rationality seems most applicable to acquisitive rather than non-acquisitive crimes.

In contrast, Shaw and McKay's (1942) social disorganisation theory links crime outcomes to networks of social trust and social control whereby a lack of effective social control is said to enable and facilitate criminality through reducing the ability or willingness of community members to exercise informal controls or to effectively lobby for formal interventions from the police. A range of factors, including poverty, ethnic heterogeneity, population turnover and family instability, have been highlighted as proxies of weakened social control (Shaw and McKay, 1942; Kornhauser, 1978; Bursik, 1988; Bursik and Grasmick, 1993; Sampson *et al*., 1997; Sampson *et al.*, 1999) and inequality is hypothesised to have an indirect effect on crime outcomes through weakening these factors of social control.

Finally, Merton's (1938) strain theory argues that the social and cultural structure can be separated into what he terms culture ends (society's valued goals) and culture

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means (the socially and institutionally accepted means of achieving those goals). Merton outlines five possible alternative responses to these goals and ends of which by far the most common is conformity and acceptance of both. Other responses are possible however. One potential response is ritualism whereby individuals may accept that they cannot achieve society's esteemed prizes (e.g. great wealth or career success) but accept this and feel it important to stick to accepted norms and behaviours, reassuring themselves that they are at least doing the right things even if not having the right things. Alternatively, individuals may retreat entirely in the sense that that they give up both on aspiring to society's chosen goals but also shun the prevailing means and behaviours, choosing instead to live within their own normative and often own behavioral world. Rebellion is a fourth possibility, whereby individuals seek to overthrow both society's prevailing goals and its means of achieving them, attempting instead to implant some other ends and means as socially dominant. However, it is the response of innovation which is most relevant to the present argument. Merton's (1938) discussion focuses particularly on the creation of strain for those that feel they ought to be able to achieve socially valued wealth, are told by society that it is open to them, but yet lack the realistic possibility of achieving those goals legitimately. Innovation occurs therefore when individuals strive for the wealth and status which society elevates but are unable to achieve these via legitimate routes and so seek to do so via crime and other illegitimate means.

Data and methods

Data

The crime data used are published Home Office data of police recorded crime in each CDRP for five crime types which are both acquisitive (burglary, robbery and vehicle crime) and non-acquisitive (violence and criminal damage) in nature. Annual crime data for each year from 2002/03–2008/09 are used and are expressed as rates per 1,000 'at-risk' population: burglary and criminal damage as rates per 1,000 dwellings, vehicle crime as a rate per 1,000 vehicle owning households and robbery and violence as rates per 1,000 residents. The main measure of inequality used is the Gini coefficient calculated for each CDRP based on published estimates of 2004/05 mean income before housing costs in each Middle Layer Super Output Area[1] (MSOA) within the CDRP. This Gini coefficient for each CDRP is weighted according to each MSOA's total population in 2005.

Although the focus is on inequality, a range of additional control variables are included. It has been argued that population density may relate to reduced risk of apprehension, to increased criminal opportunities or to residents knowing each other less well (Kelly, 2000). As CDRPs are of differing sizes, total population in each year is also considered along with the percentage of the CDRP population who are aged 16–29 due to evidence that this age group are most predisposed to crime (Cohen and Land, 1987).

In order to assess the relevance of each of the three main theoretical accounts, explanatory variables are also identified as proxies for each theory. As always, the link between theories and quantifiable (as well as quantified, small-scale and publicly available) indicators is likely to be imperfect, but the indicators used here do map relatively well on to both theory and prior quantitative research.

Unemployment is of relevance to the economic theory of crime as a proxy for the relative economic appeal of crime. Unemployment is measured by the

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percentage of the working-age population receiving social security benefits relating to involuntary unemployment (Jobseeker's Allowance). Although unemployment may push potential offenders towards crime, the economic theory also emphasises the economic attractiveness of an area to potential offenders, and average house prices in the CDRP in each year are therefore also considered.

As outlined above, four indicators of social disorganisation are discussed in the literature: residential turnover, lone parent families, ethnic heterogeneity and poverty. Of these four indicators, lone parenthood and poverty appear the most problematic proxies of the concept of social disorganisation and are not considered for inclusion. Residential turnover appears the most conceptually sound indicator. It has been suggested that population turnover weakens community networks of social control so that people are less able or willing to intervene to tackle crime, or that turnover makes crime easier through increased anonymity. For each CDRP, the population turnover rate for each year is measured as the sum of immigration and outmigration over the total population. As a secondary indicator relating to social disorganisation, the percentage of the CDRP in each year who are non-white is also examined, although this is seen as a more questionable proxy and as a secondary indicator to turnover.

As proxies relating to strain theory, Merton (1938: 678–9) draws out the relevance of stigma, lacking formal education and lacking economic resources. In line with his account, the percentage of the CDRP's GCSE cohort[2] achieving five passes at A*–C grades and the annual rate of conceptions to under 18 year olds in each CDRP are taken as indicators relating to the theory. Unemployment may also have relevance for strain theory. This is of course not to say in a deterministic manner that such issues inevitably lead to or cause future strain, but simply that they might be taken as proxies to identify areas where strain theory is likely to be of greater relevance for residents. GCSE passes and teenage conceptions also seem to have the potential to relate to the social disorganisation thesis. For strain theory these indicators may reflect potential future strain and frustration for young adults with children and/or without formal qualifications, whilst for the social disorganisation thesis they would be seen as outcomes which may proxy areas of decreased social control (Sampson *et al*., 1997).

The variables discussed above are constructed for 352 local authorities – and their equivalent CDRPs – in England[3] and for each year from 2002/03 to 2008/09. CDRPs themselves nest within Police Force Areas (PFAs), and, whilst CDRPs have considerable operational discretion, the parent PFA is an important higher organisational unit. Two variables at PFA level – the annual PFA detection rate for each crime type under study and the number of officers within the PFA – are also included. Finally, dummy terms are included in the models relating to each year from 2003/04 to 2008/09, with 2002/03 the reference group. It is possible that inequality may be endogenous (that is, affected by the set of explanatory variables included in relation to the crime outcomes), but, given that coefficients do not change markedly between full models with and without the inequality variable, this does not seem to be the case.

Methods

As the data are hierarchically structured, the article adopts a multilevel modelling approach with annual measurement occasions (level 1) nested within CDRPs (level 2), which themselves are operationally organised within PFAs (level 3). All models are

conducted in Stata using the **xtmixed** command. There is a substantial body of literature discussing the nature and benefits of multilevel models (Snijders and Bosker, 1999; Raudenbush and Byrk, 2002; Rabe-Hesketh and Skrondal, 2005; Bickel, 2007) and such models are commonly used across the social sciences where data are hierarchically nested and clustered, frequently due to the organisation of individuals within larger units (e.g. children in schools) or the repeated measurement of individuals over time. Preliminary analyses highlighted a trend of positive skew across both the dependent and explanatory variables, resulting in regression with logged dependent and logged explanatory variables being preferred. This specification is used throughout so that coefficients for all non-dummy variables can be interpreted as elasticities in the usual way.[4]

Results

To provide some context to later analyses, Figure 1 maps inequality and rates of robbery within CDRPs across England. In each map, CDRPs are arranged into quintiles with the 20 per cent of CDRPs with the lowest values shown in light grey and the 20 per cent of CDRPs with the highest values shown in black. As would be expected, in both cases the large urban conurbations show the highest values, whilst the rural expanses tend to show the lowest values, though this is clearer for inequality than for robbery. Maps showing rates of the other four crime types analysed are broadly similar.

Simple descriptive statistics of the main variables used in the analysis are shown in Table 1, whilst correlations between the crime rates and a range of explanatory variables (with all variables in log form) are shown in Table 2. Inequality is positively and fairly strongly correlated with all five crime outcomes, though to a lesser extent with criminal damage. Crime outcomes are also positively correlated with the remaining variables with the exception of the percentage of the GCSE cohort gaining five A*–C passes, average house prices and, in two instances, population turnover. A strong correlation between unemployment and youth conceptions is seen, but both variables are retained in the models due to their theoretical relevance despite potential impact on standard errors.

Table 3 introduces the modelling by displaying the partitioning of the total variance in the data across the three levels of the empty multilevel models. One might expect that annual crime levels within CDRPs across the seven years of data would be relatively similar and, therefore, that the proportion of total variance at level 1 would be relatively low. This is indeed the case for most crime types, though less so for burglary (suggesting that there is more intra-CDRP variability in burglary rates over time compared to the other crime types). For violence and criminal damage, most of the variance occurs within PFAs but between CDRPs, suggesting that there is considerable heterogeneity in terms of levels of these crime types between the CDRPs within the same PFA but that PFAs are on average more similar to one another than are the CDRPs within them. The results of likelihood ratio tests are given in the final row of Table 3 and their p-values confirm that a multilevel framework is more appropriate than single level modelling.

Table 4 reports the main findings from the separate multilevel models for each of the five crime types when the full set of explanatory variables is included and provide strong evidence for the relevance of inequality to crime. Controlling for other factors, inequality is significantly and positively related to all five crime types. The effects are larger for acquisitive crime types: other things equal, a 1 per cent increase in inequality within a

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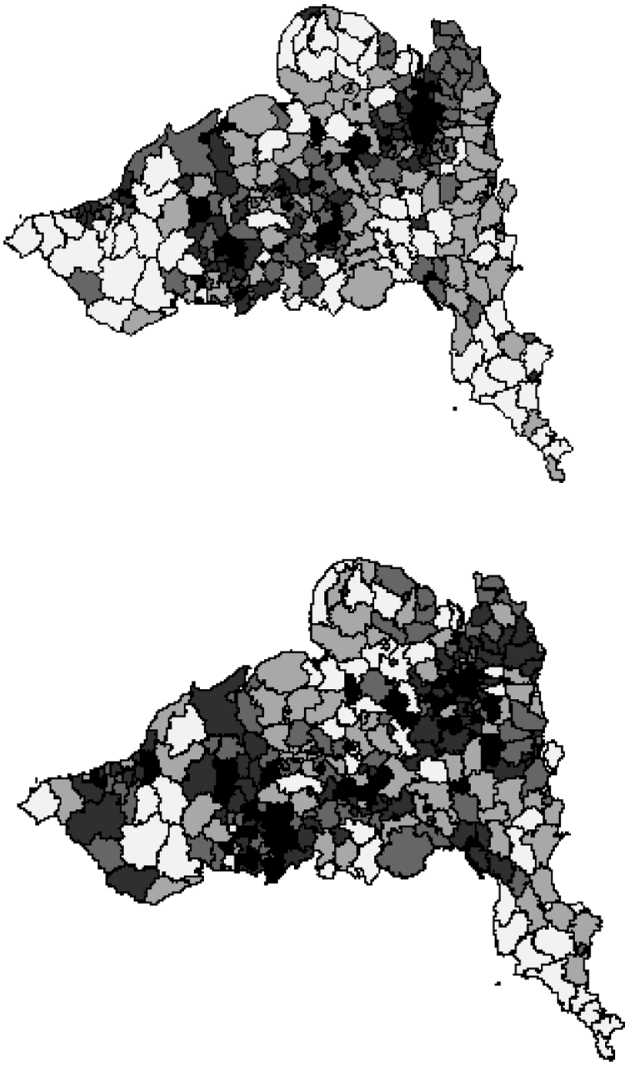

Figure 1. CDRP maps of inequality (left) and robbery rates (right).

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Table 1 Descriptive statistics of main variables

	Mean	Min	Max	SD
Burglary rate (per1,000)	26.5	5.5	113.5	12.7
Robbery rate (per1,000)	1.2	0.0	15.1	1.8
Vehicle crime rate (per1,000)	42.1	3.1	261.5	29.8
Violent crime rate (per1,000)	16.2	2.8	54.5	7.3
Criminal damage rate (per1,000)	45.1	12.8	133.1	16.2
Total population	143,395	24,509	1,016,844	95,706
Youth population rate	16.9	10.7	36.8	3.9
Population density	1.4	0.0	14.6	2.1
Population turnover	10.3	4.2	23.0	3.0
Non-white percentage	89.2	33.1	98.8	11.3
Unemployment rate	1.2	0.3	3.9	0.6
Mean house price	192,524	41,204	1,182,089	84,151
% Not achieving 5 GCSE A*–C	45.9	16.7	76.1	9.5
Teenage conception rate (per1000)	37.8	9.3	103.3	13.8
PFA Officers	5,432	1,018	30,955	8,127
PFA detection rate (burglary)	15.0	8.0	28.3	4.0
Inequality	0.06	0.02	0.15	0.02

Note: $N = 2{,}464$ (7 years of data for 352 CDRPS) for all variables.

CDRP is associated with a 0.20 per cent increase in the rate of burglary, a 0.28 per cent increase in the rate of robbery and a 0.27 per cent increase in the rate of vehicle crime. These are all significant at less than the 1 per cent level. For non-acquisitive crimes, the associations with inequality are less strong but both remain significant at the 5 per cent level at least (and violence remains significant at the 1 per cent level). Further analyses found that there was no evidence that the inequality coefficient varied randomly between CDRPs.

Amongst the other variables, unemployment is significantly and positively related to all crime types except for criminal damage, and is particularly strongly associated with robbery. In relation to the social disorganisation thesis, elasticities for population turnover are significant and positive for burglary and robbery but are insignificant for vehicle crime and violence and are significant but negative for criminal damage. Though more conceptually debatable, elasticities for the percentage non-white are significant and positive for four of the five crime types (violent crime being the exception). Further, both the percentage of the GCSE cohort gaining five A*–C grades and the youth conception rate variables could potentially relate either to strain theory or to the social disorganisation thesis. However, the consistency of findings across both variables towards non-acquisitive crime types suggests that these indicators seem to more appropriately capture notions of social disorganisation rather than economically focused rationality towards material gain as contained within strain theory.

Average house prices are significantly and negatively associated with all five crimes types when controlling for other factors. This suggests, at least at the scale of CDRPs, that wealth does not seem to act as a 'magnet' for criminality, weakening support for the relevance of the economic theory of crime. As offenders' average journeys to crime are relatively short (Wiles and Costello, 2000), this finding is perhaps to be expected even if

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Table 2 Correlations amongst variables

	Burglary rate	Robbery rate	Vehicle crime rate	Violent rate	Crim dam	Tot pop	% youth	Pop dens	Turnover	% Unem JSA	Av house price	% 5 GCSE A*–C	% non-white	Youth conc	Ineq
Burglary	1														
Robbery	0.74	1													
Vehicle crime	0.89	0.85	1												
Violence	0.54	0.71	0.66	1											
Crim dam	0.61	0.49	0.64	0.70	1										
Total pop.	0.48	0.65	0.57	0.46	0.33	1									
% Youth	0.52	0.72	0.64	0.66	0.43	0.53	1								
Pop density	0.55	0.85	0.72	0.67	0.46	0.59	0.73	1							
Turnover	−0.03	0.17	0.04	0.00	−0.33	−0.06	0.33	0.19	1						
% Unem	0.57	0.67	0.67	0.70	0.60	0.49	0.58	0.62	−0.22	1					
Av house price	−0.39	−0.05	−0.29	−0.22	−0.60	−0.04	−0.01	0.01	0.62	−0.44	1				
% 5 GCSEs	−0.49	−0.35	−0.54	−0.45	−0.59	−0.20	−0.27	−0.31	0.23	−0.55	0.58	1			
% non-white	0.33	0.71	0.47	0.43	0.05	0.51	0.66	0.66	0.50	0.31	0.43	0.05	1		
Youth conc.	0.54	0.60	0.62	0.72	0.69	0.44	0.53	0.57	−0.25	0.80	−0.51	−0.62	0.19	1	
Inequality	0.46	0.64	0.56	0.45	0.31	0.62	0.55	0.60	0.10	0.42	0.10	−0.13	0.54	0.36	1

Notes: All variables in log form.

Table 3 Empty multilevel models

	Burglary	Robbery	Vehicle crime	Violence	Criminal damage
Between-PFA variance (L3)	0.09	0.52	0.14	0.03	0.02
Within-PFA btw-CDRP (L2)	0.07	0.58	0.18	0.13	0.08
Within-CDRP btw years (L1)	0.05	0.09	0.07	0.03	0.02
LR test vs single-level model	0.00	0.00	0.00	0.00	0.00

Table 4 Estimated coefficients for the five crime types

	Burglary	Robbery	Vehicle crime	Violence	Criminal damage
Inequality	0.20*	0.28*	0.27*	0.10*	0.07†
Pop density	0.11*	0.37*	0.22*	0.10*	0.08*
Turnover	0.23*	0.35*	0.05	−0.03	−0.37*
Total population	0.07†	0.22*	0.10†	−0.06†	−0.04
Youth population	−0.19†	−0.29	−0.18	0.42*	0.36*
% Unem	0.06†	0.35*	0.10*	0.12*	0.00
Av house price	−0.41*	−0.49*	−0.21*	−0.18*	−0.18*
% 5 GCSEs A*–C	0.03	0.08	−0.06	−0.15*	−0.18*
% non-white	0.06†	0.33*	0.06†	0.01	0.10*
Youth conceptions	−0.00	0.08	0.05	0.17*	0.12*
PFA detection rate	0.02	−0.27*	−0.11	−0.10*	−0.05
PFA officers	−0.00	0.04	−0.02	−0.00	−0.12*
2003/04	−0.02	0.00	−0.06*	0.19*	0.11*
2004/05	−0.12*	−0.09*	−0.20*	0.32*	0.12*
2005/06	−0.16*	−0.09*	−0.24*	0.31*	0.09*
2006/07	−0.19*	−0.09*	−0.29*	0.31*	0.10*
2007/08	−0.25*	−0.18*	−0.41*	0.25*	−0.01
2008/09	−0.26*	−0.27*	−0.53*	0.15*	−0.15*
Constant	7.84*	3.28*	6.74*	4.95*	7.52*
Between-PFA variance (L3)	0.04	0.06	0.03	0.01	0.01
(% explained)	*56.2%*	*89.3%*	*76.8%*	*50.9%*	*62.8%*
Within-PFA btw-CDRP (L2)	0.04	0.09	0.06	0.03	0.02
(% explained)	*51.0%*	*84.6%*	*65.5%*	*78.4%*	*75.8%*
Within-CDRP btw years (L1)	0.02	0.07	0.02	0.02	0.01
(% explained)	*62.8%*	*17.2%*	*71.3%*	*27.2%*	*53.6%*

Notes: * = $p < 0.01$; † = $p < 0.05$.

one assumes that offenders act according to economic rationality (itself highly debatable). It would be interesting to repeat the analyses at a smaller spatial scale to assess whether average house prices retain this negative association with crime outcomes at a more local level. Given the finding above that unemployment is significant and positive across the models, the lack of evidence supporting the economic theory suggests that unemployment has relevance instead in relation to strain theory.

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Of the remaining variables, elasticities for population density are significantly and positively related to all five crime types as would be expected. This may be considered an aspect of social disorganisation if the causal theory is that greater population density discourages strong community ties and networks or it may simply relate to the increased anonymity and difficulty of apprehension in more dense areas. PFA detection rates and the number of PFA officers do not tend to be significant explanatory variables, but, as would be expected, coefficients are usually negative. It may be that these data do not fully capture the concepts: police officers, for example, may not be front-line staff or may work on other policing priorities within the CDRPs. Other things equal, there is consistent evidence that levels of acquisitive crime have fallen since 2002/03, but that levels of non-acquisitive crimes have increased. There has been much discussion around changes to the recording of violent crimes in particular over the past decade, in part due to the implementation of the National Crime Recording Standard in 2002 and in part due to misrecording of serious assaults as minor incidents (Hickley, 2008; Whitehead, 2010). It is not clear to what extent these recording changes underlie the trend in Table 4 of increasing levels of violent crime in a context where crime is generally falling in England (Walker *et al.*, 2009), although this would not explain the apparent increase in the other non-acquisitive crime type studied – criminal damage – over the early period in particular.

The bottom section of Table 4 shows the variance at each of the three levels in the full model. Comparing these findings with those in Table 3, the percentage of the initial variance explained within each model at each level is given in italics. Interesting differences between the five crime types are apparent. For robbery and violence, only a minority of the variance within CDRPs and between years is explained by the model whereas the majority of the variance at this level is explained for burglary and vehicle crime. This suggests that there is more random variation in the levels of robbery and violence from year to year within CDRPs which is not accounted for in the models. In general, the models explain a substantial amount of the initial variation.

A common issue in any analysis of inequality is the precise measure of inequality used.[5] Tests of the robustness of the inequality estimates to alternative specifications are provided in Appendix A, which shows the coefficients for 14 separate inequality measures when each is included into the same multilevel model as in Table 4, with the same full set of controls. The 14 inequality measures are the result of the combination of seven different inequality specifications (four general entropy measures,[6] two percentile ratios[7] and, as reported above in Table 2, the Gini coefficient) for two separate indicators (published mean estimates of 2004/05 MSOA income before housing costs as used in Table 4 and the average price of houses sold in each MSOA in 2005). The number of significant coefficients (from a possible maximum of 14) is shown in brackets and markers are displayed for statistically significant inequality coefficients only. The main message from Appendix A is that findings are robust across alternative measures of inequality, particularly across the acquisitive crime types.

Discussion

The negative impact of greater inequality on a range of social outcomes has become a central topic of current social policy. The findings presented above contribute further evidence of the harmful social effects of inequality in terms of robust associations with increased levels of crime at sub-national level across England. Controlling for other factors,

inequality within a CDRP is significantly and positively associated with increased levels of all five crime types analysed. The effects are larger for acquisitive crime types: other things equal, a 1 per cent increase in inequality within a CDRP is associated with a 0.20 per cent increase in the rate of burglary, a 0.28 per cent increase in the rate of robbery and a 0.27 per cent increase in the rate of vehicle crime. These are all significant at less than the 1 per cent level. For non-acquisitive crimes, the associations with inequality are less strong but remain significant at the 5 per cent level at least (and violence remains significant at the 1 per cent level). These findings are robust across alternative inequality specifications. Of the three main theories linking inequality and crime, there is support for the sociological theories – social disorganisation and strain theories – but not for the economic theory.

Grover (2008) critiques New Labour's continuation of the previous Conservative government's individualisation of policy around personal discourses of responsibility, including policy around crime, such that the broader social and economic antecedents of criminality are relegated down the policy agenda. This returns the discussion to the criminological arguments of left and right realism (Matthews, 1987; Young, 1988; Lowman and McLean, 1992) and, in particular, the limitations of a policy approach wedded to the rightist prescription of asserting greater control, protection of the socio-economic status quo and more intensive punishment for those criminals often on the receiving end of that system whilst turning a blind eye to other (much more financially damaging) attacks on the social order (such as large-scale tax avoidance). These findings support calls for a greater recognition of the structural role of social and economic inequalities in relation to crime outcomes and indicate a need for closer integration between social, economic and crime policies.

Wilkinson and Pickett's (2009) *The Spirit Level* perhaps best symbolises and brings together the substantial – and growing – body of evidence about the harmful effects of inequality on different social outcomes. Inevitably, the book has begun to receive criticism – some justifiable and some less so – from the Taxpayer's Alliance, Policy Exchange and the Washington-based Democracy Institute in particular (Sanadaji *et al.*, 2010; Saunders, 2010; Snowdon, 2010). However, a key aspect of any evidence-based policy making is the extent to which findings are consistently found in robust studies and – as meta-evaluations by Hseih and Pugh (1993), Wilkinson and Pickett (2006, 2009) or Kondo *et al.* (2009) demonstrate – inequality is found to be harmful in relation to different outcomes, in different national contexts, at different geographical scales and across different methodologies. The present findings add a further small piece of evidence to this large and growing pile. There remain issues to explore around precisely how inequality affects social outcomes, the scale at which this occurs and the nature of potential mediating factors. However, for anyone looking to build policies based on evidence there seems to be simply too much robust evidence of a consistent association between greater inequality and more negative social outcomes for the role of inequality to be dismissed out of hand. In terms of the present article's focus on crime for example, the damaging associations between inequality and crime are robust to the inclusion of a range of relevant controls, within a multilevel modeling structure (hence results are not likely to be the result of misspecified standard errors and resulting Type I errors) and across alternative inequality specifications. From an objective, evidence-based perspective, it is not easy to simply dismiss such evidence. The irony, as Wilkinson and Pickett (2009) highlight, is that those who continue to look to ideology rather than to evidence perpetuate

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social and economic environments in which the wealthy also fare less well, even if it is the poor who pay disproportionately within more unequal societies.

Notes

1 MSOAs are a standardised statistical geography with an average population of 7,200 individuals in 2001 and which nest within CDRPs. There are 6,781 MSOAs across England's 354 CDRPs.

2 GCSE examinations are taken at age 16 in the UK and mark the end of compulsory education.

3 Two local authorities – the Isles of Scilly and City of London – had to be excluded as not all explanatory variables are available. These two cases are also unusual in terms of their small size, nature and crime trends.

4 For example, coefficients for continuous explanatory variables can be interpreted as the percentage change in *Y* resulting from a 1 per cent change in *X*.

5 For a summary of alternative inequality measures see De Maio (2007).

6 GE(a) for $a = -1,0,1,2$.

7 p90/p50 and p90/p10.

References

Becker, G. (1968) 'Crime and punishment: an economic approach', *Journal of Political Economy*, 76, 2, 169–217.

Bickel, R. (2007) *Multilevel Analysis for Applied Research*, New York, NY: The Guildford Press.

Blau, J. and Blau, P. (1982) 'The cost of inequality: metropolitan structure and violent crime', *American Sociological Review*, 47, 1, 114–29.

Block, M. and Heineke, J. (1975) 'A labour theoretical analysis of criminal choice', *American Economic Review*, 65, 3, 314–25.

Bourguignon, F. (2001) 'Crime as a social cost of poverty and inequality: a review focusing on developing countries', in S. Yusuf, S. Evenett and W. Wu (eds.), *Facets of Globalization*, Washington, DC: World Bank.

Braithwaite, J. (1979) *Inequality, Crime and Public Policy*, London: Routledge & Kegan Paul.

Bursik, R. (1988) 'Social disorganisation and theories of crime and delinquency: problems and prospects', *Criminology*, 26, 4, 519–52.

Bursik, R. and Grasmick, H. (1993) *Neighborhoods and Crime*, New York: Lexington Books.

Chiu, W. and Madden, P. (1998) 'Burglary and income inequality', *Journal of Public Economics*, 69, 1, 123–41.

Cohen, L. and Land, K. (1987) 'Age structure and crime: symmetry vs asymmetry, and the projection of crime rates throughout the 1990s', *American Sociological Review*, 52, 2, 170–83.

Danziger, S. and Wheeler, D. (1975) 'The economics of crime: punishment or income redistribution', *Review of Social Economy*, 33, 2, 113–31.

De Maio, F. (2007) 'Income inequality measures', *Journal of Epidemiology and Community Health*, 61, 10, 849–52.

Demombynes, G. and Ozler, B. (2002) *Crime and Local Inequality in South Africa*, Washington, DC: The World Bank, Development Research Group.

Dorling, D. (2010) *Injustice: Why Social Inequality Persists*, Bristol: The Policy Press.

Ehrlich, I. (1973) 'Participation in illegitimate activities: a theoretical and empirical investigation', *The Journal of Political Economy*, 81, 3, 521–65.

Fajnzylbar, P., Lederman, D. and Loayza, N. (2002) 'Inequality and violent crime', *The Journal of Law and Economics*, 45, 1, 1–39.

Grover, C. (2008) *Crime and Inequality*, Devon: Willan Publishing.

Hickley, M. (2008) 'Violent crime up 22% as Home Office admits police have been under-recording serious offences for ten years', *Mail Online*, http://www.dailymail.co.uk/ news/article-1079927/Violent-crime-22-Home-Office-admits-police-recording-offences-years.html [accessed 03.12.2010].

Hsieh, C. and Pugh, M. (1993) 'Poverty, inequality and violent crime: a meta-analysis of recent aggregate data studies', *Criminal Justice Review*, 18, 2, 182–202.

Kelly, M. (2000) 'Inequality and crime', *The Review of Economics and Statistics*, 82, 4, 530–39.

Kennedy, B., Kawachi, I., Prothrow-Stith, D., Lochner, K. and Gupta, V. (1998) 'Social capital, income inequality and firearm violent crime', *Social Science and Medicine*, 47, 1, 7–17.

Kondo, N., Sembajwe, G., Kawachi, I., van Dam, R., Subramanian, S. and Yamagata, Z. (2009) 'Income inequality, mortality and self-related health: meta-analysis of multilevel studies', *British Medical Journal*, 339, b4471, 1–9.

Kornhauser, R. (1978) *Social Sources of Delinquency: An Appraisal of Analytical Models*, Chicago: University of Chicago Press.

Lederman, D., Loayza, N. and Menedez, A. (2002) 'Violent crime: does social capital matter?', *Economic Development and Cultural Change*, 50, 3, 509–39.

Loftin, C. and Hill, R. (1974) 'Regional subculture and homicide', *American Sociological Review*, 39, 5, 714–24.

LowmanJ. and MacLeanB. (eds.) (1992) *Realist Criminology: Crime Control and Policing in the 1990s*, Toronto: University of Toronto Press.

Matthews, R. (1987) 'Taking realist criminology seriously', *Contemporary Crises*, 11, 371–401.

Merton, R. (1938) 'Social structure and anomie', *American Sociological Review*, 3, 5, 672–82.

Messner, S. (1982) 'Societal development, social equality and homicide: a cross-national test of a Durkheimian model', *Social Forces*, 61, 1, 225–40.

Rabe-Heskth, S. and Skrondal, A. (2005) *Multilevel and Longitudinal Modelling Using Stata*, College Station, TX: Stata Press.

Raudenbush, S. and Bryk, A. (2002) *Hierarchical Linear Models: Application and Data Analysis Methods*, London: Sage.

Sampson, R., Raudenbush, W. and Earls, F. (1997) 'Neighborhoods and violent crime: a multilevel study of collective efficacy', *Science*, 227, 5328, 918–24.

Sampson, R., Morenoff, J. and Earls, F. (1999) 'Beyond social capital: spatial dynamics of collective efficacy for children', *American Sociological Review*, 64, 5, 633–60.

Sanandaji, N., Malm, A. and Sanandaji, T. (2010) *The Spirit Illusion: A Critical Analysis of How the Spirit Level Compares Countries*, London: The Taxpayer's Alliance.

Saunders, P. (2010) *Beware False Prophets: Equality, the Good Society and the Spirit Level*, London: The Policy Exchange.

Shaw, C. and McKay, H. (1942) *Juvenile Delinquency and Urban Areas*, Chicago: University of Chicago Press.

Snijders, T. and Bosker, R. (1999) *Multilevel Analysis: An Introduction to Basic and Advanced Multilevel Modelling*, London: Sage Publications.

Snowdon, C. (2010) *The Spirit Level Delusion: Fact-checking the Left's New Theory of Everything*, London: Democracy Institute.

Stack, S. (1984) 'Income inequality and property crime', *Criminology*, 22, 2, 229–57.

Subramanian, S. and Kawachi, I. (2004) 'Income inequality and health: what have we learned so far?', *Epidemiological Review*, 26, 1, 78–91.

Walker, A., Flatley, J., Kershaw, C. and Moon, D. (2009) *Crime in England and Wales 2008/09, Volume 1: Findings from the British Crime Survey and Police Recorded Crime*, Home Office Statistical Bulletin 11/09, London: Home Office.

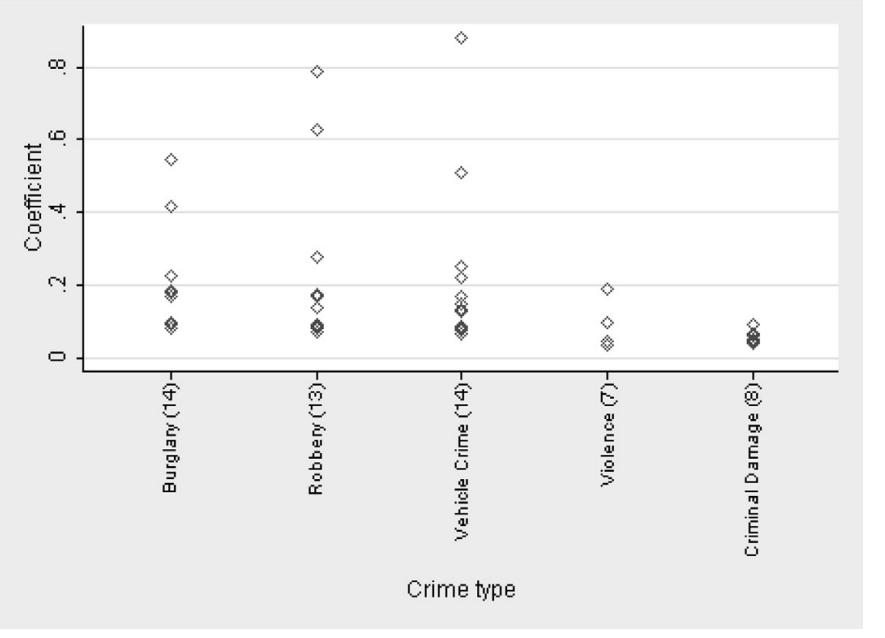
Whitehead, T. (2010) 'True scale of violent crime rise revealed', *The Telegraph*, http://www.telegraph.co.uk/news/uknews/law-and-order/7400372/True-scale-of-violent-crime-rise-revealed.html [accessed 03.12.2010].

Wilkinson, R. and Pickett, K. (2006) 'Income inequality and population health: a review and explanation of the evidence', *Social Science and Medicine*, 62, 7, 1768–84.

Wilkinson, R. and Pickett, K. (2009) *The Spirit Level: Why More Equal Societies Almost Always Do Better*, London: Penguin Books.

Wiles, P. and Costello, A. (2000) *The Road to Nowhere: The Evidence for Travelling Criminals*, Home Office Research Study 207, London: Home Office.
Young, J. (1988) *Realist Criminology*, London: Sage.

Appendix A: Consistency of inequality coefficients across different inequality measures



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